tions. Later in the same year Dr. Howitt published, with Messrs. Macmillan and Co., Ltd., his great work on "The Native Tribes of South-east Australia," in which is embodied his life's work in ethnology. By far the greater part of the materials was collected and recorded before 1889. Since then the native tribes have more or less died out, and in the older settlements of south-eastern Australia the tribal remnants have now almost lost the knowledge of the beliefs and customs of their fathers. Fortunately, Dr. Howitt began to observe and collect information before it was too late, but even then much had disappeared.

Dr. Howitt's book contains a great mass of information concerning numerous tribes, and thus it serves as an invaluable storehouse for students, but it is more than this, as it embodies the mature opinions of the father of Australian ethnology, who, by his kindly and sympathetic nature, was able to gain and retain the confidence of his native friends. The opinion of a man of such prolonged and varied experience in the field, combined with the knowledge of what others had collected, must always carry weight. The collecting and recording of complete ethnological data are naturally matters of first importance, but of even greater interest is the true appreciation of the ideas which underlie the actions of men. He who has lived among the people he describes should be the best interpreter of their ideas and ideals, and in these matters we are not likely to find a surer guide than the genial explorer and student whose death will be deplored by ethnologists all the world over. A. C. Haddon.

## NOTES.

The astronomical section of the Paris Academy of Sciences has elected M. Maurice Hamy, of the Paris Observatory, to succeed the late Dr. Janssen as a member of that section of the academy. M. Hamy entered the observatory in 1884, and was awarded the Lalande prize in 1895.

The Paris correspondent of the *Times* states that the Academy of Sciences has appointed a committee, composed of MM. Becquerel, Bouquet de la Grye, and Poincare, to consider a suggestion by M. Bouquet de la Grye concerning the application of wireless telegraphy to the problem of the determination of longitude at sea. The idea is to utilise the wireless telegraphy station of the Eiffel Tower in order to send, for instance, every night at midnight a Hertzian signal giving the time of the meridian of Paris. M. Bouquet de la Grye thinks, indeed, that if a wireless telegraphy station were established at the Peak of Teneriffe signals could be detected completely around the earth.

The next International Congress of Archæology will be held at Cairo in 1909.

For the purpose of discussing subjects of interest to those concerned in the work of museums, art galleries, and kindred institutions, a conference of members of the Museums Association and others interested will be held in the Harris Free Public Library and Museum, Preston, on the afternoon of Saturday, April 11.

The twenty-fourth annual meeting of the Society of Dyers and Colourists will be held on April 3, at 4.30 p.m., at the Technical College, Bradford. The president, Prof. R. Meldola, F.R.S., will deliver his presidential address on "The Founding of the Coal-tar Colour Industry." The first awards of the Perkin medal will be made to Profs. C. Graebe and C. Liebermann for their synthesis of alizarin. On the evening of the same day the members of the society will dine together at the Great Northern Victoria Hotel, Bradford.

Earthquake shocks occurred at Mexico City during the evening of March 26, and were felt also at Guanajuata and Rincon. The town of Chilapa, in the State of Guerrero, was destroyed. The disturbances were recorded by Prof. Milne, F.R.S., at Shide, in the Isle of Wight; by Prof. Belar at Laibach, Austria; and by Prof. Michie Smith in southern India, all of whom communicated their observations to the *Daily Mail*. The earthquake is reported to have begun soon after 11 p.m. on March 26, to have reached its maximum at 11.53 p.m., and continued for more than three hours. The shock was felt at St. Thomas, in the West Indies.

We learn from the April number of *Nature Notes*, the magazine of the Selborne Society, that at last a Bill is to be introduced into Parliament to restrict the importation of birds' skins, and so prevent in some measure the rapid extermination of beautiful birds, of which the egret ("osprey") and birds-of-paradise are typical examples. A short time ago, Lord Avebury, president of the Selborne Society, called together a meeting of representatives of the various learned societies at his house to consider whether legislation ought to be attempted, and this being the general opinion of those present, the main features of a Bill drafted by Mr. James Buckland were adopted for presentation to the societies interested.

Efforts are being made to form an Institute of Metals, which it is hoped by the promoters will follow similar lines to the Iron and Steel Institute. The proposed institute is intended to advance the knowledge of non-ferrous metals and their alloys, more especially copper, zinc, tin, aluminium, lead, nickel, silver, and platinum; to form a means of communication between members of the same trade; and to arrange periodical meetings for the purpose of discussing practical and scientific subjects relating to the metallurgy and use of the metals enumerated. A preliminary meeting was held in Manchester on March 11, and was well attended. A representative committee comprising practical men engaged in the industries concerned and men of science was elected, and it was decided to arrange a further meeting in London. This special meeting will, we are informed, be held on June 10 next, at 2.30 p.m., at the Institution of Mechanical Engineers, Westminster. On this occasion the committee will report progress, and it is hoped the proposed institute will be constituted formally. All inquiries should be addressed to Mr. William H. Johnson, c/o Messrs. R. Johnson, Clapham and Morris, Ltd., 24 and 26 Lever Street, Manchester, who is acting for the honorary secretary, Prof. Carpenter, during his indisposition.

In the March issue of the Bulletin of the St. Petersburg Academy, Dr. E. Jäderholm gives a preliminary account of the hydroid polyps collected in the Arctic Ocean north of Siberia by the Russian Polar Expedition of 1900–3, while Dr. Salensky continues his description of the development of the gephyrean worm (mis-called echinoderm on p. 493 of our last issue) Echiurus.

The American white ant (*Termes flavipes*) and the bagworm (*Thyridopteryx ephemeraeformis*) constitute, respectively, the subjects of two illustrated "Circulars," Nos. 50 and 97, of the U.S. Bureau of Entomology. An excellent account is given in the first of these of the social economy of the white ant, and the damage inflicted by the species in the Southern United States.

The existence of an intimate relationship between the fauna of the eastern coast of Arctic North America and that of northern Europe has for some years been admitted by naturalists. Supplementary evidence to the same effect is afforded by a recent study on the part of Mr. J. A. Cushman of minute fresh-water crustaceans from Labrador and Newfoundland, the results of which are published in No. 1589 of the Proceedings of the U.S. National Museum. Cladocera were represented in the collection by seven and the Copepoda by one species, all of which are common to Europe.

The second part of the new Leipzig journal *Vorträge und Aufsatze über Entwickelungsmechanik der Organismen* is devoted to a paper read by Mr. Jacques Loeb before the International Zoological Congress held at Boston (Mass.) in August last, on the chemical character of the secretions of the reproductive organs. Starting with the axiom that the special prerogative of living organisms is the power of automatic reproduction, the author proceeds to describe the chemical composition of the reproductive elements, and the bearing of this on certain biological theories.

*Zeitung für Literatur, Kunst und Wissenschaft* for March 15 contains a summary of the results of the Hamburg Expedition to the Magellan Strait in 1892–3, as detailed in a work of three volumes just issued by the Hamburg Museum of Natural History. A feature on which the Hamburgers specially pride themselves is that the expedition was practically "run" by the municipality and inhabitants of their own city, while even the scientific workers are to a great extent their own fellow-citizens. According to the notice in the *Zeitung*, special attention appears to have been directed to the subject of "bipolarity," that is to say, the occurrence of similar types of animal life at the two poles and their absence from almost the whole of the intervening area. The geological and faunistic resemblances of South Africa, South America, and Australia are also referred to, with the remark that most of the common types indicate extremely ancient forms of life.

The importance—or rather the absolute necessity—of cooperation among workers in different branches of biological research formed the subject of discussion at a meeting of the American Society of Naturalists in December last, in which Profs. Lillie, Trelease, Donaldson, Howell, and Angell took part. The discussion is reported *in extenso* in *Science* of March 5. The first speaker, Prof. Lillie, took for his text the American Marine Biological Laboratory as an example of cooperation, not only among the members of its governing body, but with various other institutions. As it is, several branches of sciences are represented in the laboratory, but it is suggested that it will be necessary to add a chemical section. Prof. Trelease, on the other hand, took his illustrations from the fact that at the present day interest in biology centres on the mechanism of animals and plants, and their relations to environment—factors demanding the cooperation of morphological and physiological research. A further advantage claimed for cooperation is that by its means alone is it possible to discover the most productive and original research-workers.

A part (vol. iii., No. 4) of the Records of the Botanical Survey of India is assigned to a revision of the Indo-Malayan species of Cedrela undertaken by Prof. C. de Candolle. The author restores to the genus the species separated by some systematists under a genus Toona. The columnar receptacle of the flower is noted as a character of systematic value. As it was found difficult to assign specific limits to the specimens ranging round the species Toona, the forms are split up into numerous varieties. Of three new species created, *Cedrela Hainesii* is the most notable on account of the staminodes that are present in the flower.

Writing on the Florida strangling figs, an article intended for the nineteenth annual report of the Missouri Garden, Prof. E. A. Bessey describes the characters of the two indigenous species *Ficus aurea* and *Ficus populnea*. The former commonly, the latter rarely, begins life as an epiphyte; in this connection it was experimentally determined that the seeds of *Ficus aurea* require light for germination. The seeds of *Ficus populnea* show a less marked light requirement. Neither species develops the two distinct types of pistillate flowers known as seed and gall flowers, but larvæ are produced if the flowers are visited by ovipositing Blastophagæ; otherwise seeds are formed.

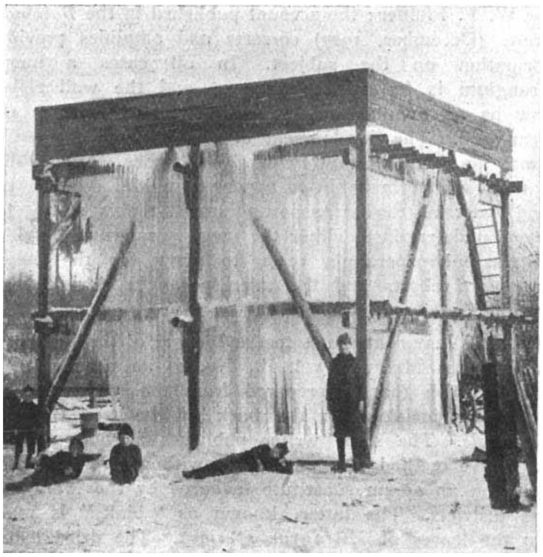
The early stages of development of the sporangia and the sporocarps of Azolla have been carefully studied by Miss W. F. Pfeiffer; the account published in the *Botanical Gazette* (December, 1907) corrects and amplifies previous information on the subject. In all cases a megasporangium is formed at an apex, and the wall rising below as an annulus quickly outgrows and encloses the sporangium. The development of the megasporangium is normal up to the formation of eight tetrads. Meanwhile, the microsporangia begin to appear as initial cells on the broad stalk of the megasporangium. At this stage, for reasons undetermined, either the megasporangium develops and the microsporangia cease to grow, or the megasporangium aborts and the microsporangia then develop normally.

Mr. L. Wray contributes to the Journal of the Federated Malay States Museum (vol. ii., No. 2) an account of a Malay varnish that is prepared from the resin obtained by making incisions in the bark of the tree *Garcinia merguensis*. The same writer publishes a short account of a native method of embroidering with gold thread, and a note on an opium substitute favoured by the Malays in some districts. The latter, known as "biak," is made from the leaves of *Mitragyne speciosa*. The dried leaves are powdered and mixed with water to form a decoction, or an extract is made that is smoked like "chandul," the extract of opium. In the same number will be found a hand-list of birds of the Malay Peninsula compiled by Mr. H. C. Robinson.

Mr. N. W. Thomas, in his "Bibliography of Anthropology and Folk-lore," published under the auspices of the Royal Anthropological Institute and the Folk-lore Society, has issued the first number of an annual series which will be indispensable to all students of the subjects with which it deals. His bibliography includes papers and articles in no fewer than 165 publications—proceedings of learned societies, magazines, and other ephemeral literature. In subsequent issues we may hope for a more full analysis of the papers with which the compiler deals. But, as it stands, this pamphlet, which is provided with excellent indexes, serves a distinctly useful purpose.

Lawyers in India have long been aware that, besides what may be called the official or sacerdotal view of law contained in the Institutes of Manu and other codes of the same kind, there is a vast mass of local and tribal usage which is independent of, and in many cases directly opposed to, the legislation of the Brahmans. The powerful tribal organisation in the Punjab has made the conflict between these two bodies of law more obvious than in other parts of the Empire. The materials for a study of the subject are voluminous and complex, and Mr. H. A. Rose, the superintendent of the Ethnographical Survey, has done useful service in codifying the district reports in his recently issued "Compendium of the Punjab Customary Law." He divides his subject into three chapters—marriage, inheritance, alienation—and in connection with such subjects as endogamy, exogamy, polyandry, and polygamy he has collected a mass of curious facts which will be interesting to anthropologists, particularly as they represent the usages of a very primitive type of tribal society.

MR. H. WARTH sends us a photograph, here reproduced, representing a method in use in south Germany for producing ice from pure water in winter. The photograph was taken last January in Balingen (Württemberg). The illustration shows a large wooden framework in two storeys, 6 metres square and 6 metres high. Each storey is covered with a floor of eighteen parallel beams, in the centre of which a tube, encased in wood, rises beyond the upper floor. This tube is connected with the water-main, and the water issues through a rotating disc, which sends a moving spray on the beams. As the water drops from the beams icicles are formed, which reach the middle floor and finally the ground. The volume of water is regulated according to the temperature of the air, which may vary between −3° C. and −18° C. During low temperature 20 cubic metres of ice may be formed in one night. As the ice retains the shape of isolated columns, it is easily broken up and removed. The ice is then stored for use in summer.



Production of large Icicles.

IN the Transactions of the South African Philosophical Society of December, 1907, Mr. J. R. Sutton, of Kenilworth (Kimberley), discusses the question of the supposed cloud-dispersing power of the full moon. From observations of the state of the night sky at Potsdam from January, 1894, to June, 1900 (*Met. Zeits.*, May, 1907), Herr Meissner found no such dispersing power, but a minimum amount of cloud about the time of new moon and a maximum shortly after full. Mr. Sutton thinks that if there be no lunar influence whatever upon the clouds something like Meissner's result might be expected, as the moonlight makes clouds visible (see Schmid's "Lehrbuch d. Met.," 1860, p. 681). At Kenilworth Mr. Sutton finds that cirrus and cirro-stratus appear to dissolve at sunset, but the rising moon makes them plainly visible again. The 8h. p.m. observations taken between January, 1900, and January, 1907, show considerably more cloud between the third and eighteenth lunar day than between the eighteenth and third. Dr. Shaw's interesting paper, "La Lune mange les Nuages" (Quart. Journ. Roy. Met. Soc., April, 1902), shows that any diminution of a floating cloud is due to evaporation by loss of heat, and that "any effect of direct radiation from the moon may be quite properly disregarded."

THE Survey Department of the Egyptian Ministry of Finance has issued, as a pamphlet of thirty-eight pages with thirteen index maps, a list of maps, plans, and publications published up to December 31, 1907. The list includes town maps, cadastral maps, topographical maps of Egypt, special maps, and maps of the different provinces.

PROF. E. GUARINI has published a pamphlet (Paris, 1908) on the resources of Peru. The mineral resources include many rich deposits of gold, silver, copper, and iron ores, which are at present unworked owing to lack of economical methods of transport. The author believes that by the introduction of electric-power transmission and electric smelting, Peru might rank amongst the leading industrial States of the world.

THE question of handling materials in industrial plants is one continually presenting itself to owners and engineers for proper solution, and some striking illustrations showing the remarkable progress recently made in America in economical material-handling equipments are given by Mr. Werner Boecklin in the *Engineering Magazine* (vol. xxxiv., No. 6). The depreciation of such equipments is necessarily high, but in the majority of cases an increase in the first cost, which will materially decrease this charge, is warranted. In the same issue Mr. T. Kennard Thomson describes the construction of hoisting machinery for the handling of materials. He shows that here, as elsewhere in the domain of modern enterprise, economy in unit costs and maximum of output can be secured only where intelligent use is made of the mechanical facilities afforded for the handling of material.

THE application of the camera as an adjunct to topographical mapping began practically with its invention, and it has been employed with varying success since that time. An interesting development is described in the bimonthly Bulletin of the American Institute of Mining Engineers (1908, No. 19) by Mr. C. W. Wright, who has successfully employed in the field a panoramic camera taking a 5-inch by 12-inch view, including an angle of 140°. The plotting of a map from the views taken by the phototheodolite is a tedious process, and the office work is many times greater than that required for the same amount of mapping by the panoramic camera.

WITH the view of ascertaining whether the results of recent chemical investigations would be of value in lessening the amount of evaporator scale formed in the sugar mills of Hawaii, an elaborate series of experiments was carried out by Mr. S. S. Peck, and the results are published in Bulletin No. 21 of the Hawaiian Sugar Planters

Association (Honolulu, 1908). While the results offer no precise solution to this problem, they explain some of the phenomena of scale formation, and contain much of interest to other investigators, practical and theoretical, of this question, perhaps giving them a clue which will lead to the discovery of a successful method of treating the juice of the cane which will inhibit to some extent the formation of scale during evaporation.

Mr. W. Gallatly has published (Cambridge: Elijah Johnson, 30 Trinity Street) a pamphlet on the nine-point circle, consisting of a collection of short notes reprinted from the *Mathematical Gazette* and other sources. Most of the notes deal with analytical rather than geometrical properties associated with a triangle and the circle in question.

In the Proceedings of the American Academy of Arts and Sciences, xliii., 8, Messrs. C. R. Sanger and O. F. Black discuss the quantitative determination of arsenic by the Gutzeit method. They find that consistent results can be obtained, and the main difficulties avoided, by allowing the arsenic deposit to travel along a strip of paper, and by sensitising this with mercuric chloride in preference to silver nitrate.

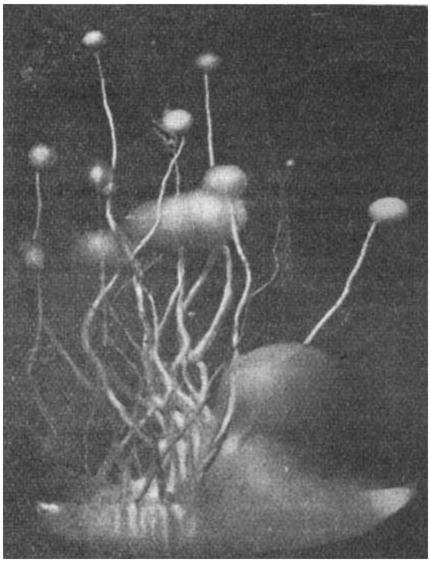
In the Proceedings of the Tokyo Mathematico-Physical Society (January), K. Aichi discusses the capacity of nearly spherical electrical conductors. The property, obvious from the general principles of the theory of maxima and minima, that the capacity of a nearly spherical conductor is, to the first order of small quantities, equal to that of a spherical conductor of equal area, is deduced from analytical formulæ.

In *Engineering* of March 27 illustrations are given of the new plant of the Stavely Ironworks, Chesterfield, an undertaking with a record of two centuries. The new works are of great interest, not because of any distinctive departure, but because great discrimination has been exercised in weighing the relative merits of different systems in order that the many mechanical features in the complete equipment should harmonise with the aim to ensure efficiency.

The application of electricity is fast revolutionising many industries, and an interesting application in the chemical industry is described in the Journal of the Franklin Institute by Mr. E. R. Taylor, who gives an account of the process and apparatus for the production in the electric furnace of carbon bisulphide, the manufacture of which in retorts is one of the most disagreeable of manufactures. The furnace used is 10 feet in diameter and 20 feet high, and will produce 5000 lb. per twenty-four hours with economy and satisfaction. Two electrodes only are provided. The market for carbon bisulphide is a limited one, and no larger furnace than those now in use would be justified under present conditions. But were the market for carbon bisulphide as large and as regular as that for pig iron, the size of the furnace need only be limited by market requirements and the amount of electricity available.

Under the title "Two Oxford Physiologists" (Clarendon Press, Oxford, price 1*s.*), Prof. Francis Gotch has published an address, delivered before the Oxford University extension summer meeting of last year, which deals with the life and work of Richard Lower (1631–1691) and John Mayow (1643–1679). The address contains an admirable account of the work of Lower, who is best known as being the first to carry out the transfusion of blood from one animal to another, and of Mayow, who first recognised the true nature of respiration, and whose "medico-physical works" have just been translated from Latin into English (Nature, vol. lxxvii., p. 339). Prof. Gotch's eloquent address has an especial interest for the general reader in so far as it throws a clear light on the conditions under which scientific work was performed in the seventeenth century.

We have received a reprint of a lecture by Prof. Stéphane Leduc on "Diffusion and Osmosis" delivered before the meeting held at Rheims in 1907 of the French Association for the Advancement of Science. Certain remarkable experiments are described dealing with the formation and properties of the so-called "waves of diffusion"; the phenomena dealt with, although evidently due to the transmission of material particles, are accompanied by effects entirely similar to those produced by wave motion, especially in so far as they show interference and diffraction. It is stated also that by means of diffusion under certain chosen conditions, using merely solutions of different concentration coloured with a little Indian ink, the phenomena of karyokinesis can be reproduced in their proper order and form. Peculiar growths, presenting an appearance similar to that of true vegetable growths, can also be obtained by leaving "seeds," consisting, for example, of copper sulphate mixed with sugar, in an aqueous solution of potassium ferrocyanide saturated with common salt, and containing more or less gelatin and other salts (see accompanying figure). In different experiments growths analogous to roots, rhizomes, stems, leaves, and terminal organs of true plants were obtained, each with a characteristic internal structure depending on the nature of the salts in solution. By these experiments the interesting question is raised, how far the morphology of ordinary plants is determined by purely osmotic phenomena.



Osmotic growths.

In 1869 Bunsen wrote to Sir Henry Roscoe an account of a mysterious explosion caused by touching with the finger some reduced rhodium and iridium. The question of the explosive platinum metals has been taken up several times since then by various investigators, but the exact cause of the explosive properties of these metals has not been made clear. The explosive material is obtained by treating the zinc alloy of the platinum metal with an acid, and has been regarded as an allotropic modification of the metal. In the *Zeitschrift für physikalische Chemie* for February 25 is an interesting account, by E. Cohen and Th. Strengers, of a long series of experiments on this subject. It was found that the residues from the action of hydrochloric acid upon zinc alloys of rhodium, iridium, ruthenium, and platinum are explosive; palladium and osmium do not furnish explosive residues. Explosive rhodium is now shown to contain both oxygen and hydrogen, and if air is carefully excluded during the removal of the zinc by the acid, the residue is not explosive. The heat evolved during the explosion was measured, and found to be of the same order of magnitude as the heat of combination of the quantities of hydrogen and oxygen actually occluded by the metal. The most probable explanation of the explosive properties of these reduced platinum metals is that the explosion is due to the sudden combination of the occluded hydrogen and oxygen. It was found, however, that in the case of ruthenium an explosive material was obtained even if oxygen vas rigorously excluded during the separation from zinc, and this point still remains to be cleared up. In one of the calorimetric measurements, 4 grams of the rhodium destroyed a platinum calorimeter. A photograph of the remains of the calorimeter after the operation is given, and the authors remark that the effect of the explosion of *a pound* of this material (the quantity Bunsen had in the experiment above mentioned) can be easily imagined. Bunsen, fortunately, escaped with superficial burns on the face and severe burns on the hands.

The name of Dr. R. W. Stewart should have been given as the author of the books on heat, light, and sound for matriculation candidates reviewed in Nature of March 26 (p. 482).

Mr. H. J. Glaisher has published the April issue of his catalogue of publishers' remainders; it contains particulars of many scientific and other books which, though in a new condition, are offered at greatly reduced prices.

Messrs. Oliver and Boyd have published a second edition of "Structural and Field Geology for Students of Pure and Applied Science," by Prof. James Geikie, F.R.S. The first edition of this work was reviewed at length in Nature of July 6, 1905 (vol. lxxii., p. 223), and the present issue differs but little from its predecessor, though some omissions have been supplied and a number of emendations and corrections made.

## OUR ASTRONOMICAL COLUMN.

Astronomical Occurrences in April:—

April 4. 1h. 24m. Venus in conjunction with Moon. Venus 5° 52′ N.
,, 1h. 28m. Mars in conjunction with Moon. Mars 4° 15′ N.
,, 3h. 27m. Venus in conjunction with Mars. Venus 1° 37′ N.
9. 10h. 55m. Jupiter in conjunction with Moon. Jupiter 1° 21′ S.
14. 11h. 56m. Minimum of Algol (β Persei).
17. 8h. 45m. Minimum of Algol (β Persei).
19 22. Epoch of April Meteors (Radiant 271° + 33°).
20. Venus. Illuminated portion of disc = 0·540.
22. 3h. 12m. Uranus in conjunction with Moon. Uranus 0° 27′ N.
24. 4h. 45m. to 8h. 27m. Transit of Jupiter's Sat. III. (Ganymede).
26. 7h. Venus at maximum elongation (45° 37′ E.).

Comet 1907 II.—We have received an abstract of a paper read by Prof. E. Weiss before the Vienna Academy of Sciences on February 6, in which the author directs attention to the striking similarity of the orbit of comet 1907 II. to that of the comet of 1742. It appears probable that they refer to the same body, having a period of 165 years. From the fact that the earth passes very near to the ascending node of the cometary orbit towards the end of March, Prof. Weiss expects that a fairly rich meteor shower, from a radiant at $\alpha = 307°·6$, $\delta = -60°·7$, should be observed in the southern hemisphere.

The President of the Astrographic Congress.—At the request of several members of the permanent committee of the Astrographic Congress, Sir David Gill has, we understand, proposed to the permanent committee that M. Baillaud, the new director of the Paris Observatory, should be elected president of the international congress in succession to the late M. Loewy. Remembering the important part played by France in the labours expended on the Carte du Ciel, the generous support of the Institute of France in the publication of the committee's reports, and the great and successful efforts of Admiral Mouchez, M. Tisserand, and M. Loewy in the furtherance of the work, it is almost as a matter of course that the director of the Paris Observatory should be elected to fill the important position of president of the international committee.

The Helium, $D_3$, Line in the Solar Spectrum.—In No. 394 (March, p. 133) of the *Observatory*, Captain Daunt continues the discussion as to the presence of $D_3$ as a dark line in the solar spectrum, raised by the photographs taken at Kodaikanal by Mr. Nagaraja last year, and comes to the conclusion that the fine dark line shown on the photographs is not an absorption effect of $D_3$ at all. The main objection raised by Captain Daunt is that the fine dark line on the photographs runs right across the spectrum, and is sligtly widened over the spot, whereas, according to his own and to Mr. Buss's observations, the helium absorption line is generally very broken and patchy, and has never been seen over the spot itself; it always appears in the faculic areas surrounding the spot.

Two Remarkable Spectroscopic Binaries.—In a note published in the *Observatory* (No. 394, p. 139, March) Mr. Gore shows that two spectroscopic binaries, α Carinæ and α Pavonis, recently discovered at the Lick Observatory, must have remarkably small masses. In the case of the former, if the inclination of the orbit be 90°, the mass is but 0·007 of the sun's mass, and if the inclination is 30° this value is only increased to 0·056. The corresponding mass values for α Pavonis are 0·00047 and 0·0038 respectively, and in this case the result is more remarkable still, for α Pavonis is a brighter star, mag. 2·12; its spectrum is of the Orion type. Mr. Gore suggests that both these stars are probably near our system, and an effort should be made to determine their parallaxes.

Variation in the Radial Velocity of β Ursæ Majoris.—In No. 4239 of the *Astronomische Nachrichten* Dr. H. Ludendorff announces that plates taken at Potsdam show the radial velocity of β Ursæ Majoris to be variable. The values given range from −6 km. (March 27, 1904) to −26 km. (April 28, 1905), and in a footnote it is stated that later observations show the period to be twenty-seven days.

Dr. Nordmann's Variable Star Observations.—Following up the researches mentioned in these columns last week (p. 497), Dr. Charles Nordmann has obtained equally striking results from observations of β Lyræ and δ Cephei. In these cases the epochs of maxima and minima, as observed through the coloured screens, agree with the ephemerides, but the amplitude and form of the light-curves vary with the region of the spectrum observed. Thus for β Lyræ the difference between the principal maximum and minimum amounts to 0·66 magnitude with the red, 0·94 magnitude with the green, and 1·34 magnitude with the blue screen. The differences between the two principal maxima vary from 0·3 magnitude with the blue to zero with the red screen, and it is shown that this star emits a greater proportion of the less refrangible rays at the principal than at the secondary minimum. Similar results accrue from the observations of δ Cephei (*Comptes rendus*, No. 10, p. 518, March 9).